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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,390

02/19/2004

Alexey D. Zinin

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EXAMINER

CHRISS, ANDREW W

ART UNIT

PAPER NUMBER

2619

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/782,390	Applicant(s) ZININ, ALEXEY D.	
	Examiner Andrew Chriss	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment, filed December 27, 2007 has been entered and carefully considered. Claims 1-38 are currently pending.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 20-38 are** rejected under 35 U.S.C. 112, first paragraph, because the claimed apparatus comprising a network element comprises a single means and therefore is regarded as undue breadth. Per MPEP 2164.08(a): "A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. *In re Hyatt*, 708 F.2d 712, 714-715, 218

USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.) When claims depend on a recited property, a fact situation comparable to Hyatt is possible, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor.”

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 4-16 and 23-36** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim language cites a method step and apparatus functionality of "applying interface groups." However, Applicant's specification is not clear as to what this step comprises. Applicant's specification discloses comparing an interface attributes of inbound and outbound interfaces (paragraphs 0058 and 0062) which results in a specific routing behavior. However, the step/functionality of applying interface groups, given its broadest reasonable interpretation, could be interpreted as an interface assignment, rather than the disclosed comparison. For examination purposes, Examiner assumes that the step of applying an interface group comprises assigning an interface group.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. **Claims 1, 2, 17, 20, 21, and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan et al (United States Patent 7,046,680), hereinafter McDysan, in view of Ho et al (United States Patent Application Publication US 2002/0116501), hereinafter Ho.

Regarding Claims 1 and 20, McDysan discloses a method and access device (Figure 3, 40) comprising a marker/policer 82 that marks a packet by setting bits in a DiffServ Type of Service (TOS) byte in an IP packet header (column 7, line 58-column 8, line 4), which is known by one of ordinary skill in the art to comprise Layer-3 control information. However, McDysan may not disclose encapsulating the packets at Layer-2. In the same field of endeavor, Ho discloses encapsulating private IP packets within Layer-2 Tunneling Protocol (L2TP) messages (i.e., within an L2TP header) (paragraph 0055; Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the L2TP encapsulation disclosed in Ho with the marker/policer disclosed in McDysan in order to establish a service tunnel for private IP services over a connectionless network.

Regarding Claims 2 and 21, McDysan discloses setting a DiffServ TOS byte in an IP packet header, as described with regards to Claim 1 above, therefore equivalent to Applicant's claimed functionality of marking the packets using a unique protocol identifier.

Regarding Claims 17 and 36, Ho further discloses using L2TP encapsulation to encapsulate control messages (paragraph 0055), therefore equivalent to Applicant's claimed functionality of encapsulating packets according to control encapsulation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the L2TP encapsulation disclosed in Ho with the marker/policer disclosed in McDysan in order to establish a service tunnel for private IP services over a connectionless network.

9. **Claims 3 and 22** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho as applied to claims 1 and 20 above, and further in view of Nakamichi et al (United States Patent Application Publication US 2002/0085498 A1), hereinafter Nakamichi. McDysan and Ho disclose all of the limitations of Claims 1 and 20, as described above. However, the references may not disclose marking the packets using a link-local MPLS label. In the same field of endeavor, Nakamichi discloses using a "link state type" field in a link state advertisement (LSA) in an MPLS network. Specifically, Nakamichi discloses a value for said field that denotes "link-local," indicating that the flooding scope is within a local (sub)network (paragraphs 0065 and 0066). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the link state advertisement disclosed in Nakamichi with the marker/policer disclosed in McDysan, as modified above, in order to allow a node in a communications network to collect traffic information and perform load sharing depending on traffic conditions.

10. **Claims 4-12 and 23-31** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho as applied to claims 1 and 20 above, and further in view of Yu et al (United States Patent Application Publication US 2004/0010583 A1), hereinafter Yu.

Regarding Claims 4 and 23, McDysan and Ho disclose all of the limitations of Claims 1 and 20, as described above. Further, McDysan discloses a determination by the marker/policer as to when marking a packet comprising IP control information should be performed (column 7, line 58-column 8, line 4). However, the references may not disclose applying interface groups. In the same field of endeavor, Yu discloses the use of interface groups to facilitate virtual router redundancy protocol (VRRP) failover. The interface may include an IP address, VPN tunnel,

WAN physical interface, among others (paragraph 0022). The interface group is assigned a name to enable it to be referenced at a later time (paragraph 0025). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 5 and 24, Yu further discloses packet communications within a particular interface group (Figure 1, interface group defined between interfaces 'a' and 'd' within network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 6 and 25, Yu further discloses interface groups assigned to backbone interfaces (Figure 4, static tunnel through Internet between network device A and network device B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 7 and 26, Yu further discloses interface groups assigned to interfaces with customer-specific interface groups (Figure 4, interface 'a' between network device A and Host PC). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet

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marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 8 and 27, Yu further discloses applying interface groups to peer interfaces (Figure 4, static tunnel between network device A and network device D). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

Regarding Claims 9-12 and 28-31, Yu further discloses applying interface groups to packet communications between interface groups (Figure 4, connections between peer, backbone, and customer networks at network device A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the interface group application disclosed in Yu with the control packet marking disclosed in McDysan, as modified above, in order to withstand failures of network device components, without triggering unnecessary failover in a network device.

11. **Claims 13 and 32** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho and Yu, as applied to claims 4 and 23 above, and further in view of Chuah et al (United States Patent Application Publication US 2004/0054924 A1), hereinafter Chuah. McDysan, Ho, and Yu disclose all of the limitations of Claim 4, as described above. However, the aforementioned references may not disclose applying interface groups to communication of ICMP packets. In the same field of endeavor, Chuah discloses routers performing probabilistic marking of IP packets or intentional ICMP trace-backs in order to trace the source of an attack

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(paragraph 0062). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the ICMP trace-back disclosed in Chuah with the marker/policer disclosed in McDysan, as modified by Ho and Yu above, in order to detect and block IP packets involved in DDOS attacks.

12. **Claims 14 and 33** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho and Yu, as applied to claims 4 and 23 above, and further in view of Pan et al (United States Patent 7,336,615), hereinafter Pan. McDysan, Ho, and Yu disclose all of the limitations of Claim 4, as described above. However, the aforementioned references may not disclose applying interface groups to communication of ping packets. In the same field of endeavor, Pan discloses assigning predetermined port numbers to LSP ping messages (column 14, lines 48-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine ping message port assignment disclosed in Pan with the marker/policer disclosed in McDysan, as modified by Ho and Yu above, in order to automatically detect the status of a label switched path.

13. **Claims 15 and 34** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho and Yu, as applied to claims 4 and 23 above, and further in view of Fotedar (United States Patent Application Publication US 2004/0085965 A1). McDysan, Ho, and Yu disclose all of the limitations of Claim 4, as described above. However, the aforementioned references may not disclose applying interface groups to communication of traceroute packets. In the same field of endeavor, Fotedar discloses assignment of traceroute packets to a virtual router address indicative of a loopback interface (paragraph 0011). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the traceroute

packet assignment disclosed in Fotedar with the marker/policer disclosed in McDysan, as modified by Ho and Yu above, in order to enable direct communications between a virtual router and a virtual address, without having to know a physical address.

14. **Claims 18 and 37** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho as applied to claims 1 and 20 above, and further in view of Johansson (United States Patent 6,061,330). McDysan and Ho disclose all of the limitations of Claims 1 and 20, as described above. However, the references may not disclose receiving unmarked control packets using rate-limited queues. In the same field of endeavor, Johansson discloses an ATM switch receiving packets into rate-limited queues (Figure 1, 116; Figure 4, 410). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the rate-limited queuing disclosed in Johansson with the unmarked control packets (i.e., packets received prior to being marked) disclosed in McDysan, as modified above, in order to perform fair queuing scheduling using both buffer occupancy and input rate.

15. **Claims 19 and 38** rejected under 35 U.S.C. 103(a) as being unpatentable over McDysan in view of Ho as applied to claims 1 and 20 above, and further in view of Hussey et al (United States Patent Application Publication US 2001/0049744 A1), hereinafter Hussey. McDysan and Ho disclose all of the limitations of Claims 1 and 20, as described above. Further, McDysan discloses receiving packets (Figure 3). However, the aforementioned references may not disclose processing the received packets at a line rate. In the same field of endeavor, Hussey discloses a processor pool aggregation technique wherein a received packet data stream is capable of being processed at a line rate (paragraph 0050). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the packet processing

disclosed in Hussey with the marker/policer disclosed in McDysan, as modified above, in order to improve data processing within a data-handling device.

Response to Arguments

16. Applicant's arguments filed December 27, 2007, with respect to the rejection(s) of claims 1-5, 7-9, 11, 17, 20-24, 26-28, 30, and 36 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the marker/policer disclosed in McDysan, the L2TP encapsulation disclosed in Ho, and the interface group assignment disclosed in Yu.

17. Applicant's arguments filed December 27, 2007, with respect to the rejection(s) of claims 6, 10, 12, 16, 18, 19, 25, 29, 31, 35, 37, and 38 under 35 U.S.C. 102(e) have been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of the marker/policer disclosed in McDysan, the L2TP encapsulation disclosed in Ho, the interface group assignment disclosed in Yu, the interface/port assignments disclosed in Chuah, Pan, and Fotedar, the rate-limited queuing disclosed in Johansson, and the line rate processing disclosed in Hussey.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Chriss whose telephone number is (571)272-1774. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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